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Simulations of 65 nm silicon sensors using Allpix Squared

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The Tangerine project's goal is to develop the next generation of small collection electrode monolithic silicon pixel detectors using the 65nm CMOS imaging process which offers a higher logic density and overall lower power consumption compared to previously used processes.
A combination of TCAD and Monte Carlo (MC) simulations are used in order to understand the processes and parameters that are involved in the developments in the new 65 nm technology.
Allpix Squared utilizes the realistic electric field and doping profiles provided by the TCAD simulations and by the use of MC methods, obtains important quantities that characterize the performance of the sensors. These results can later be compared to results from test beam experiments.
In this presentation, a discussion on the procedure, setup, and importance of these simulations will be presented, as well as the results obtained from various detectors layouts and configurations.

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